

REMARKS

The claims have been amended to further clarify the subject matter regarded as the invention. Claims 8, 22, 28 and 37 have been cancelled. New claims 48-51 have been added. Claims 1-7, 9-21, 23-27, 29-36, and 38-51 are now pending in the application. Favorable reconsideration of the application, as amended, is respectfully requested.

VIII. REJECTIONS OF CLAIMS UNDER 35 U.S.C. § 103

Claims 1-3, 7-8, 10, 12-13, 15, 17-18, 22, 24, 28, 30-33, 36-37, 39, 41-42, and 45-47 stand rejected 35 U.S.C. § 103(a) as being unpatentable over a combination of U.S. Patent No. 6,397,260 (Wils) and U.S. Patent No. 6,295,276 (Datta).

The disclosed embodiments enable traffic flow in a load sharing redundancy group to be controlled by changing allocation of forwarding addresses assigned to gateways in the load sharing redundancy group. In accordance with one embodiment, the forwarding addresses are redistributed among the gateways in the load sharing redundancy group (e.g., see claims 6, 35, 43, and 47). In accordance with another embodiment, the forwarding addresses are redistributed among the hosts (e.g., see claims 4-5, 11, 33-34, 40).

Wils discloses virtual routers configured with a common IP address, where each virtual router has a unique virtual MAC address. See col. 6, lines 21-47. A router can become a master for one or more virtual routers, and therefore handle all the forwarding traffic for these virtual routers. See col. 7, lines 8-43. It appears that a master replies (or does not reply) based upon the host's MAC address. See col. 7, lines 8-26.

The Examiner asserts that Wils discloses changing allocation of the forwarding addresses, where a first plurality of forwarding addresses have been assigned to a first gateway device and a second plurality of forwarding addresses have been assigned to a second gateway device, citing col. 7, lines 27-43 and col. 6, lines 20-46. However, it is important to note that each router of Wils has a single virtual MAC address associated therewith. For example, with respect to claims 2-3, the Examiner admits that MAC-MB is the MAC address for router R1 and MAC-MA is the MAC address for router R2. In other words, a plurality of forwarding addresses are not assigned to each router of Wils (e.g., where each address is a MAC or vMAC address). As such, Applicant asserts that Wils fails to disclose or suggest changing allocation of the forwarding addresses, where a first plurality of forwarding addresses have been assigned to a first gateway

device and a second plurality of forwarding addresses have been assigned to a second gateway device.

Applicant respectfully asserts that Wils neither discloses nor suggests measuring the traffic flow for each of assigned forwarding addresses (where a plurality of forwarding addresses have been assigned to each gateway). In addition, the Examiner admits that Wils fails to disclose adjusting the traffic flow. The Examiner seeks to cure the deficiencies of Wils with Datta.

Datta discloses a system in which data packets are multiplexed between multiple routers. See Abstract. An ARP responder provides responses to ARP requests that contain an IP address of an identified router. See col. 15, lines 16-51. A router may be selected by using load information. See col. 15, lines 16-51. While Datta does disclose using load information, Datta neither discloses nor suggests measuring the traffic flow for each of the assigned forwarding addresses, where a first plurality of forwarding addresses have been assigned to a first gateway device and a second plurality of forwarding addresses have been assigned to a second gateway device.

It is important to note that Datta enables a router to be selected in order to accomplish load balancing. Thus, Datta merely discloses the identification of a router. As set forth above, Wils discloses a single MAC address associated with each router. The cited references, separately or in combination, neither disclose nor suggest assigning a plurality of forwarding addresses to a gateway device. As such, the cited references, separately or in combination, neither disclose nor suggest adjusting the traffic flow by changing allocation of the forwarding addresses, where a plurality of forwarding addresses have been assigned to each gateway. In fact, even if the references were combined, the combination of Wils and Datta would merely support the identification of a gateway device. The combination of Wils and Datta not be able to adjust the traffic flow by changing allocation of the forwarding addresses, where each gateway device has been assigned a plurality of forwarding addresses. As such, the combination of the cited references would fail to achieve the desired result.

Moreover, Applicant respectfully asserts that the cited references imply that only a single forwarding address is assigned to each gateway device. As such, Applicant respectfully asserts that the cited references teach away from the claimed invention. Accordingly, Applicant respectfully asserts that claims 1-3, 7-8, 10, 12-13, 15, 17-18, 22, 24, 28, 30-33, 36-37, 39, 41-42, and 45-47 are patentable over the cited references.

Claims 8, 22, 28, and 37 stand rejected as being unpatentable over a combination of Wils, Datta, and U.S. Patent Application Publication No. 2003/037165 (Shinomiya).

As set forth in the amended claims, the load-sharing redundancy group provides failover services in the event that one of the gateway devices ceases operation. Generally, failover services are provided by a backup router in the event of a failure of a master router through the use of protocols such as HSRP. In other words, typically only one gateway device is in use (e.g., active) at any point in time.

Through the use of a protocol such as GLBP, more than one gateway device is capable of actively forwarding packets at any point in time. Unfortunately, such redundancy groups are generally incapable of balancing the load sharing capabilities among the gateway devices.

In many of the amended claims, it is clearly specified that the first gateway device is capable of actively forwarding packets simultaneous with the second gateway device, and the second gateway device is capable of actively forwarding packets simultaneous with the first gateway device.

The claims further indicate that the measured traffic flow is adjusted by changing allocation of the forwarding addresses. In contrast, Shinomaya discloses that a master router sends an allocation packet to a backup router in order to start routing processing of packets that meet a notified condition. See e.g., par. [0103]. However, the backup router discards packets that do not meet the notified condition. The claimed invention enables more than one router in a redundancy group to actively forward packets at a given point in time, without the discarding of packets.

Moreover, as set forth above, Shinomaya requires that the load be distributed via a communication packet sent by a master router to a backup router. In other words, Shinomaya requires that the master gateway device notify the backup router when it has routing responsibilities. Thus, Shinomaya teaches away from redistributing the forwarding addresses among the hosts (e.g., claims 4-5, 11, 33-34, 40), which would not require communication by one gateway device to another gateway device.

Applicant respectfully asserts that Shinomiya fails to cure the deficiencies of the primary references, as set forth above. Accordingly, Applicant respectfully asserts that claims 8, 22, 28, and 37 are patentable over the cited references.

Claims 5, 11, 26, 34, 40, and 44 stand rejected as being unpatentable over a combination of Wils, Datta, and U.S. Patent No. 7,065,043 (Wu).

Even if Wu did disclose a load monitor identifying a gateway device with the lowest workload, Wu fails to cure the deficiencies of the primary references. For example, Wu neither

discloses nor suggests identifying a forwarding address having the lowest measured traffic flow, where the identified gateway device has been assigned a plurality of forwarding addresses. Accordingly, Applicant respectfully asserts that claims 5, 11, 26, 34, and 40 are patentable over the cited references.

Claims 9, 23, 29, and 38 stand rejected as being unpatentable over a combination of Wils, Datta, and U.S. Patent No. 6,633,585 (Ghanwani).

Applicant respectfully asserts that Ghanwani fails to cure the deficiencies of the primary references, as set forth above. Accordingly, Applicant respectfully asserts that claims 9, 23, 29, and 38 are patentable over the cited references.

Each of the independent and dependent claims further recite additional limitations that further distinguish these claims from the cited references. The additional limitations recited in the independent or dependent claims are not further discussed, as the above-discussed limitations are believed to be sufficient to distinguish the claimed invention from the cited references. Thus, for all the foregoing reasons, it is respectfully requested that the Examiner withdraw the rejection of the claims under 35 U.S.C § 103(a).

IX. CONCLUSION

Applicants believe that all pending claims are in condition for allowance, and respectfully requests a Notice of Allowance at an early date. If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 510-663-1100.

Respectfully submitted,
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